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Notice of Allowability	Application No.	Applicant(s)
	10/692,665	MUPPALANENI ET AL.
	Examiner	Art Unit
	Duc T. Doan	2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Examiner amendnent 8/29/07*.

2. ☒ The allowed claim(s) is/are *1,6-8,19,30,36 (renumbered by Examiner)*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☐ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

HYUNG SOUGH
SUPERVISORY PATENT EXAMINER
9/16/07

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set for in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.1 14, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.1 14. Applicant's submission filed on 7/2/07 has been entered.

Subsequently, telephone interviews with the Applicant's representative were conducted on 8/17/07 and 8/27/07 which result in further amendments faxed to Examiner on 8/29/07

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1 .312.To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for the examiner's amendments to the claims was given in a telephone interview with Jordan M. Becker (Reg #39602) on 8/29/07; the content of the amendments was faxed to Examiner on 8/29/07 (see attached amendment).

Claims 1-38 have been presented for examination in this application. In response to the last office action, claims 2-5,9-18,20-29,31-35,37-38 have been canceled. As the result, claims 1,6-8,19,30,36 are now pending in this application.

Claims 1,6-8,19,30,36 are allowed.

Allowable Subject Matter

᷎ Claim 1 is allowed because the prior art of record does not teach or suggest that

"...queuing write commands in a temporary storage of the first storage server between

consistency points, wherein each consistency point is an event characterized by executing the

write commands queued in the temporary storage to write data corresponding to a file system of

the first storage server to a local set of mass storage devices coupled to the first storage server; in

response to initiation of each consistency point, concurrently sending the write commands

queued in the temporary storage from the first storage server to the local set of mass storage

device and to a remote set of mass storage devices coupled to the second storage server; wherein

the memory blocks of the local and remotes of mass storage devices include address blocks that

each store a pointer to another block in use by the file system, and data blocks that store data for

the file system;..... at an end of each consistency point constructing a representation to reference

each memory block of the local set of mass storage devices that is in use to represent the file

system; the representation being in the form of a sub-tree structure that include nodes that

represent one or more of the address blocks and one or more of the data blocks, the sub-tree

structure being rooted in a root node that includes a pointer to the sub-tree structure; and sending

only said root node from the first storage server to the second storage server, said root node

comprising information to allow reconstruction of the entire representation by the second storage

device." as recited in the claim and in combination with other remaining claimed matter set

forth in the claimed invention.

Claim 8 is allowed because the prior art of record does not teach or suggest that "queuing

the block-level write commands in a temporary storage of the first storage server

between consistency points, wherein each consistency point is an event characterized by

executing the write commands queued in the temporary storage to write data corresponding to

the file system to the local set of mass storage devices; and in response to the initiation of each

consistency point, concurrently sending the block-level write commands queued in the

temporary storage from the first storage server to the local set of mass storage devices and to a

remote set of mass storage devices coupled to the second storage server to cause the memory

blocks of the local and remote set of mass storage devices to be updated; wherein the memory

blocks of the local and remote sets of mass storage devices include address blocks that each store

a pointer to another block in use by the file system, and data blocks that store data fro the file

system; constructing a representation to reference each memory block of the local set of

mass storage devices that is in use to represent the file system after the memory blocks have been

updated; the representation being in the form of a sub-tree structure that includes nodes that

represent one or more of the address blocks and one or more of the data blocks, the sub-tree

structure being rooted in a root node that includes a pointer to the sub-tree structure; and sending

only the root node from the first storage server to the second storage server, said root node

comprising information to allow reconstruction of the entire representation by the second

storage server. "as recited in the claim and in combination with other remaining claimed matter

set forth in the claimed invention.

Claim 19 is allowed because the prior art of record does not teach or suggest that

"queuing the block-level write commands in a temporary storage of the storage server

between consistency points, wherein each consistency point is an event characterized by

executing the write commands queued in the temporary storage to write data corresponding to

the file system to the local set of mass storage devices; in response to initiation of each

consistency point, concurrently sending the block-level write commands queued in the temporary

storage from the storage server to the local set of mass storage devices and to a remote set of

mass storage devices coupled to another storage server to cause the memory blocks of the local

and remote mass storage device to be updated; wherein the memory blocks of the local and

remote sets of mass storage devices include address blocks that each store a pointer to another

block in use by the file system, and data blocks that store data for the file system;

constructing a representation to reference each memory block of the local set of mass

storage devices that is in use to represent the file system, after the memory blocks have been

updated; the representation being in the form of a sub-tree structure that includes nodes that

represent one or more of the address blocks and one or more of the data blocks, the sub-tree

structure being rooted in a root node that includes a pointer to the sub-tree structure; and sending

only said root node from said storage server to the other storage server, said root node

comprising information to allow reconstruction of the entire representation by the other

storage server. "as recited in the claim and in combination with other remaining claimed matter

set forth in the claimed invention.

Claim 30 is allowed because the prior art of record does not teach or suggest that

"queuing the block-level write commands in a temporary storage of the first storage server

between consistency points, wherein each consistency point is an event characterized by

executing the write commands queued in the temporary storage to write data corresponding to

the file system to the local set of mass storage devices; and in response to initiation of each

consistency point, concurrently sending the block-level write commands queued in the

temporary storage from the storage server to the local set of mass storage devices and to a remote

set of mass storage devices coupled to a second storage server to cause the memory blocks of the

local and remote sets of mass storage devices to be updated; wherein the memory blocks of the

local and remote sets of mass storage devices include address blocks that each store a pointer to

another block in use by the file system, and data blocks that store data for the file system;

constructing a representation to reference each memory block of the local of mass storage

devices that is in use to represent the file system, after the memory blocks have been

updated; the representation being in the form of a sub-tree structure that includes nodes that

represent one or more of the address blocks and one or more of the data blocks, the sub-tree

structure being rooted in a root node that includes a pointer to the sub-tree structure; and sending

only said root node from the first storage server to the second storage server, said root node

comprising information to allow reconstruction of the entire representation by the second

storage server. " as recited in the claim and in combination with other remaining claimed matter

set forth in the claimed invention.

Claim 36 is allowed because the prior art of record does not teach or suggest that "at each

of a series of consistency points, constructing a representation of a file system, the representation

being in the form of a sub-tree structure that includes a plurality of nodes and includes pointers

pointing to each memory block used to store a file system maintained by a first server, the sub-

tree structure being rooted at a root node, said each memory block belonging to a first set of

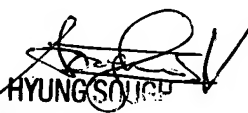mass storage devices coupled locally to a first server, wherein each consistency point is an event

characterized by, in response to initiation of the consistency point, sending block-level write commands queued in a temporary storage of the first server between consistency points, concurrently to the first set of mass storage devices to update memory blocks of the first of mass storage device and to a second set of mass storage devices coupled locally to a second server to update memory blocks of the second set of mass storage devices; and sending only said root node from the first server to the second server at each consistency point, said root node comprising information to allow reconstruction of the entire representation by the second server. as recited in the claim and in combination with other remaining claimed matter set forth in the claimed invention.

The remaining dependent claims, not specifically mentioned, are allowed for the same rationale as the independent claim(s) being based from.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc T. Doan whose telephone number is 571-272-4171. The examiner can normally be reached on M-F 8:00 AM 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung S. Sough can be reached on 571-272-6799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

HYUNG SOUGH
SUPERVISOR

9/16/07